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Substitute for Form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known				
		Application Number	09/484303			
		Filing Date	January 18, 2000			
		First Named Inventor	Ahn, Kie			
		Group Art Unit	2823			
		Examiner Name	Berezny, Neal			
Sheet 1 of 3		Attorney Docket No: 303.648US1				

US PATENT DOCUMENTS

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate
	US-01/0002333	05/31/2001	Huang, Chao-Yuan , et al.	438	637	03/29/1999
	US-2002/0014646	02/07/2002	Tsu, , et al.	257	296	
	US-2002/0028552	03/07/2002	Lee, , et al.	438	243	
	US-2002/0096768	07/26/2002	Joshi, Rajiv Vasant	257	750	
	US-2002/0109233	08/15/2002	Farrar, Paul A.	257	762	
	US-4,394,223	07/19/1983	Hall, Dean	204	15	10/06/1981
	US-4,948,459	08/14/1990	Van Learhoven, , et al.	156	643	01/04/1989
	US-5,034,799	07/23/1991	Tomita, K. , et al.	357	71	02/14/1990
	US-5,034,799	07/23/1991	Tomita, K. , et al.	357	71	02/14/1990
	US-5,384,284	01/24/1995	Doan, T T. , et al.	437	190	10/01/1993
	US-5,413,862	05/09/1995	Lur, Water , et al.	437	195	07/16/1994
	US-5,447,887	09/05/1995	Filiplak, Stanley , et al.	437	200	04/01/1994
	US-5,595,937	01/21/1997	Mikagi, K.	437	192	04/12/1996
	US-5,609,721	03/11/1997	Tsukune, A , et al.	156	646.1	01/03/1995
	US-5,719,089	02/17/1998	Cheng, Meng-Jaw , et al.	438	637	06/21/1996
	US-5,719,410	02/17/1998	Suehiro, S. , et al.	257	77	12/16/1996
	US-5,814,557	09/29/1998	Venkatraman, Ramnath , et al.	438	622	05/20/1996
	US-5,821,168	10/13/1998	Jain, Ajay	438	692	07/16/1997
	US-5,858,877	01/12/1999	Dennison, C. H. , et al.	438	700	01/21/1997
	US-5,895,740	04/20/1999	Chien, Rong-Wu , et al.	430	313	11/13/1996
	US-5,907,772	05/25/1999	Iwasaki, Haruo	438	253	02/26/1997
	US-5,925,930	07/20/1999	Famworth, Warren M. , et al.	257	737	05/21/1996
	US-5,930,669	07/27/1999	Uzoh, Cyprian	438	627	04/03/1997
	US-5,972,179	10/26/1999	Chittipeddi, , et al.	204	192.17	09/30/1997
	US-5,989,623	11/23/1999	Chen, Liang-Yuh , et al.	427	97	08/19/1997
	US-6,037,248	03/14/2000	Ahn, Kie	438	619	06/13/1997
	US-6,091,136	07/18/2000	Jiang, T. , et al.	257	676	11/17/1998

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PTO-904 (AUG-9-01)

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		Filing Date	January 18, 2000			
		First Named Inventor	Ahn, Kie			
		Group Art Unit	2823			
		Examiner Name	Berezny, Neal			
		Attorney Docket No: 303.648US1				
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US-6,100,193	08/01/2000	Suehiro, , et al.	438	685		
US-6,126,989	10/03/2000	Robinson, Karl , et al.	427	97	08/26/1998	
US-6,140,234	10/31/2000	Uzoh, Cyprian , et al.	438	678	01/20/1998	
US-6,150,281	11/21/2000	Hsu, C. , et al.	438	640	05/25/1999	
US-6,159,769	12/12/2000	Farnworth, Warren M. , et al.	438	108	01/05/1999	
US-6,187,656	02/01/2001	Lu, , et al.	438	592		
US-6,190,732	02/20/2001	Ormstead, , et al.	118	729		
US-6,207,553	05/27/2001	Buynoski, M. , et al.	438	622	01/26/1999	
US-6,207,558	03/27/2001	Singhvi, Shri , et al.	438	648	10/01/1999	
US-6,208,016	03/27/2001	Farrar, Paul	257	643	02/24/1999	
US-6,211,049	04/03/2001	Farrar, Paul A.	438	597	02/24/1999	
US-6,211,073	04/03/2001	Ahn, K. Y.	438	653	02/27/1998	
US-6,221,763	04/24/2001	Gilton, Terry L.	438	643	04/05/1999	
US-6,232,219	05/15/2001	Blalock, , et al.	438	637	05/20/1998	
US-6,249,056	06/19/2001	Kwon, Dong-chul , et al.	257	758	11/01/1999	
US-6,265,311	07/24/2001	Hautala, J J., et al.	438	680	04/27/1999	
US-6,284,656	09/04/2001	Farrar, Paul A.	438	687	08/04/1998	
US-6,287,954	09/11/2001	Ashley, L , et al.	438	622	12/09/1999	
US-6,288,442	09/11/2001	Farrar, Paul A.	257	678	09/10/1998	
US-6,323,543	11/27/2001	Jiang, T. , et al.	257	676	04/13/2000	
US-6,323,553	11/01/2001	Hsu, , et al.	257	751	11/01/2001	
US-6,326,303	12/04/2001	Robinson, Karl , et al.	438	678	02/11/2000	
US-6,342,448	01/29/2002	Lin, J. , et al.	438	687	05/31/2000	
US-6,359,328	03/01/2002	Dublin,	257	622		
US-6,372,622	04/16/2002	Tan, , et al.	438	612	10/26/1999	
US-6,376,370	04/23/2002	Farrar, Paul A.	438	678		
US-6,383,920	05/07/2002	Wang, P. , et al.	438	639	01/10/2001	
US-6,387,542	05/14/2002	Kozlov, Alexander , et al.	428	673	07/06/2000	
US-6,399,489	06/04/2002	MSaad, H. , et al.	438	680	11/01/1999	
US-6,403,481	06/11/2002	Matsuda, T. , et al.	438	687	08/10/1999	
US-6,429,120	08/06/2002	Ahn, Kle Y., et al.	438	635	01/18/2000	
US-6,518,198	02/11/2003	Klein, Rita J.	438	758	08/31/2000	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T ²
	JP-07-321111	08/12/1995	Tetsuo, K.	H01L	21/320 5	

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS**EXAMINER****DATE CONSIDERED**

Substitute Disclosure Statement Form (PTO-1448)

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PTO-902A (04/01)
Application for Patent or Trademark
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <small>(Use as many sheets as necessary)</small>		Complete if Known	
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		Filing Date	January 18, 2000
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		Group Art Unit	2823
		Examiner Name	Berezny, Neal
		Attorney Docket No: 303.648US1	
Sheet 3 of 3			

Examiner Initials*	Cite No *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
		EISEN BRAUN, E. T., et al., "Selective and Blanket Low-Temperature Copper CVD for Multilevel Metallization In ULSI", <u>Conference Proceedings ULSI-VII</u> , (1992), 5 pages	
		FUKUDA, T. , et al., "0.5 -micrometer-Pitch Copper-Dual-Damascene Metallization Using Organic SOG (k=2.9) for 0.18-micrometer CMOS Applications", <u>IEEE</u> , (1999), pp. 619-622	
		HIRAO, S. , et al., "A Novel Copper Reflow Process Using Dual Wetting Layers", <u>Symposium on VLSI Technology, Digest of Technical Papers</u> , (1997), 57-58	
		KALOYEROS, A. E., et al., "Blanket and Selective Copper CVD from Cu(FOD)2 for Multilevel Metallization", <u>Mat. Res. Soc. Symp. Proc.</u> , Vol. 181,(1990), 6 pages	
		KLAUS, J. W., "Atomic Layer Deposition of Tungsten Nitride Films Using Sequential Surface Reactions", <u>Journal of the Electrochemical Society</u> , 147(3),(2000),pp. 1175-1181	
		MIN, JAE-SIK , et al., "Metal-Organic Atomic-Layer Deposition of Titanium-Silicon-Nitride Films", <u>Applied Physics Letters</u> , Volume 75, No. 11,(1999),pp. 1521-1523	
		MIN, J. , et al., "Metal-organic atomic-layer deposition of titanium-silicon-nitride films", <u>Applied Physics Letters</u> , 75(11), (1999),pp .1521-1523	
		VENKATESAN, S. , "A High Performance 1.8V, 0.20 micrometer CMOS Technology with Copper Metallization", <u>IEEE</u> , (1997),pp. 769-772	

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Substitute Disclosure Statement Form (PTO-144B)

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